

Application Serial No.: 10/004,363
Response to May 5, 2004 Office Action

REMARKS

Claims 1-3, 5-18 and 20-23 are in the application, with Claims 1, 12, 13 and 17 being independent. No new matter has been added. Reconsideration and further examination are respectfully requested.

Double Patenting Rejections

Claims 1-3, 5-18 and 20-23 were rejected for obviousness-type double patenting over the claims of U.S. Patent No. 6,535,574 and over the claims of U.S. Patent Application Serial No. 10/051,088. While the propriety of these rejections is not conceded, Applicants currently intend to file Terminal Disclaimers to obviate the rejections once the present application is otherwise deemed to be in condition for allowance.

Prior Art Rejections

Claims 1-3, 5-18 and 20-23 were rejected under 35 U.S.C. §102 as allegedly anticipated by U.S. Patent No. 6,405,072 to Cosman. Reconsideration and withdrawal of the rejection are respectfully requested.

Applicants respectfully submit that the current Office Action ignores the claim language as amended by the previously-filed Amendment. Instead, the Office Action characterizes each of the amended claims as "referring to three dimensional surface imaging and its matching to internal three dimensional structure so that proper alignment with the previously taken images and the current position of the patient". A rejection under §102 cannot be based on such a generalization of the claimed invention, but must rather show that the reference teaches every element of the claim. See M.P.E.P. §2131.

Claims 1 and 17

Previously-amended independent Claim 1 relates to a method including acquisition of first three-dimensional surface data representing at least a portion of a patient's body while the patient is in a first position substantially maintained during a computed tomography scan, and acquisition of second data representing at least one internal three-dimensional portion of the

Application Serial No.: 10/004,363
Response to May 5, 2004 Office Action

patient's body while the patient is in the first position. The method also includes acquisition of third three-dimensional surface data representing at least the portion of the patient's body while the patient is in a second position, wherein the second position is substantially maintained in preparation for radiation treatment.

Figure 6 and col. 12, line 26 through col. 14, line 20 of Cosman were alleged to disclose "three dimensional surface imaging and its matching to internal three dimensional structure so that proper alignment with the previously taken images and the current position of the patient". This allegation does not reflect the amended language of Claim 1 and therefore does not support a rejection of Claim 1. Contrary to the requirement of M.P.E.P. §2131, nowhere does the Office Action allege that Cosman discloses acquisition of first three-dimensional surface data while a patient is in a first position substantially maintained during a computed tomography scan, acquisition of second data representing at least one internal three-dimensional portion of the patient's body while the patient is in the first position, and acquisition of third three-dimensional surface data representing at least the portion of the patient's body while the patient is in a second position substantially maintained in preparation for radiation treatment. Accordingly, the rejection is believed to be improper.

The techniques of Cosman each include determining a location of a target within a patient's body with respect to a device used during treatment of the target. First, scan data is acquired that associates the target with reference points on the surface of the patient. Next, in a treatment room, locations of the reference points are determined in relation to the device (e.g. LINAC machine L, image scanning apparatus 191). The locations are then correlated to the previously-acquired scan data to provide the location of the target with respect to the treatment device(s).

The above-described disclosure of Cosman clearly does not anticipate the unambiguous language of Claim 1. Cosman does not describe any system to acquire three-dimensional surface data while a patient is in a first position and to acquire other three-dimensional surface data while the patient is in a second position. Cosman is therefore not seen or alleged to disclose acquisition of first three-dimensional surface data while a patient is in a first position substantially maintained during a computed tomography scan, acquisition of second data representing at least one internal three-dimensional portion of the patient's body while the patient is in the first position, and acquisition of third three-dimensional surface data representing

Application Serial No.: 10/004,363
Response to May 5, 2004 Office Action

at least the portion of the patient's body while the patient is in a second position substantially maintained in preparation for radiation treatment.

Claim 1 is therefore believed to be in condition for allowance. Claim 17 relates to a medium storing controller-executable process steps that roughly correspond to the method of Claim 1. Claim 17 is therefore also believed to be allowable for at least those reasons presented above with respect to Claim 1. Withdrawal of the rejections of Claims 1, 17 and their respective dependent claims is therefore respectfully requested.

Claim 12

Previously-amended independent Claim 12 relates to a method including acquisition of computed tomography data of a patient while the patient remains substantially in a first position, acquisition of first three-dimensional surface data of the patient while the patient remains substantially in the first position, and determination of a radiation treatment plan based on the computed tomography data, the three-dimensional data, and data representing a physical layout of a radiation treatment station. The method further includes acquisition of second three-dimensional surface data of the patient while the patient remains substantially in a second position at the radiation treatment station, determination of whether the second three-dimensional data corresponds to the first three-dimensional data, and delivery of radiation to the patient according to the radiation treatment plan if it is determined that the second three-dimensional data corresponds to the first three-dimensional data.

Again, the outstanding Office Action ignores the amended language of Claim 12, and fails even to allege that Cosman anticipates each element of Claim 12. Nevertheless, Cosman is not seen to disclose at least the acquisition of first three-dimensional surface data of a patient while the patient remains substantially in a first position in which computed tomography data is also acquired, determination of a radiation treatment plan based on the computed tomography data, the three-dimensional surface data, and data representing a physical layout of a radiation treatment station, and acquisition of second three-dimensional surface data of the patient while the patient remains substantially in a second position at the radiation treatment station.

Cosman describes the determination of a location of a target within a patient's body with respect to a device. The determination proceeds by locating reference points on the surface of the patient and correlating the located reference points to previously-acquired scan data which

Application Serial No.: 10/004,363
Response to May 5, 2004 Office Action

indicates the position of the target with respect to the reference points. Cosman does not describe any system to acquire three-dimensional surface data while a patient is in a first position and to acquire other three-dimensional surface data while the patient is in a second position.

Consequently, Cosman cannot be seen to describe the acquisition of first three-dimensional surface data of a patient while the patient remains substantially in a first position in which computed tomography data is also acquired, and acquisition of second three-dimensional surface data of the patient while the patient remains substantially in a second position at a radiation treatment station. Moreover, nowhere does Cosman describe the determination of a radiation treatment plan based on the computed tomography data, the three-dimensional surface data, and data representing a physical layout of the radiation treatment station.

Claim 12 is therefore believed to be in condition for allowance and withdrawal of the rejection thereof is respectfully requested. If the rejection of Claim 12 is maintained, Applicants respectfully request the Examiner to specifically point out where Cosman teaches acquisition of first three-dimensional surface data of a patient while the patient remains substantially in a first position in which computed tomography data is also acquired, and acquisition of second three-dimensional surface data of the patient while the patient remains substantially in a second position at a radiation treatment station. Applicants also respectfully request the Examiner to indicate where Cosman describes the determination of a radiation treatment plan based on the computed tomography data, the three-dimensional surface data, and data representing a physical layout of the radiation treatment station.

Claim 13

Independent Claim 13 concerns a system which includes a computed tomography scanning device for acquiring computed tomography data of a patient while the patient is in a scanning position, a first surface photogrammetry device for acquiring first three-dimensional surface data of at least a portion of the patient's body while the patient is in the scanning position, a radiation treatment device for delivering radiation to the patient, and a second surface photogrammetry device for acquiring second three-dimensional surface data of at least the portion of the patient's body while the patient is in a treatment position on the radiation treatment device.

Application Serial No.: 10/004,363
Response to May 5, 2004 Office Action

The Office Action ignores the additional elements that were added to Claim 13 by the previous Amendment. The Office Action therefore fails to even allege, as required by M.P.E.P §2131, that Cosman discloses a first surface photogrammetry device for acquiring first three-dimensional surface data of at least a portion of a patient's body while the patient is in a scanning position, and a second surface photogrammetry device for acquiring second three-dimensional surface data of at least the portion of the patient's body while the patient is in a treatment position.

Moreover, Cosman is not seen to disclose the foregoing features of independent Claim 13. As stated in the previous response, each embodiment of Cosman describes a single device (i.e., LINAC machine L or image scanning apparatus 191) that is used to produce surface data while a patient is in a treatment position. Accordingly, Cosman cannot be read to describe a system including a scanning device for acquiring computed tomography data of a patient while the patient is in a scanning position, a first surface photogrammetry device for acquiring first three-dimensional surface data of at least a portion of the patient's body while the patient is in the scanning position, a radiation treatment device for delivering radiation to the patient, and a second surface photogrammetry device for acquiring second three-dimensional surface data of at least the portion of the patient's body while the patient is in a treatment position on the radiation treatment device. Claim 13 is therefore believed to be in condition for allowance, and withdrawal of the rejection thereof is respectfully requested.

Application Serial No.: 10/004,363
Response to May 5, 2004 Office Action

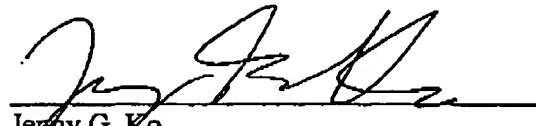
CONCLUSION

The outstanding Office Action presents a number of characterizations regarding each of the applied references, some of which are not directly addressed herein because they are not related to the rejections of the independent claims. Applicants do not necessarily agree with the characterizations and reserves the right to further discuss those characterizations.

For at least the reasons given above, it is submitted that the entire application is in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience. Alternatively, if there remains any question regarding the present application or any of the cited references, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is cordially requested to contact the undersigned.

Respectfully submitted,

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Date


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